

What is claimed is:

1. A method of manufacturing a transversely aligned web in which filaments are aligned in a transversely direction, comprising the steps of:

- 5 preparing a spinning means having a plurality of nozzles arranged in parallel with an machine direction of a conveyer for extruding molten polymer in the form of filaments and a high-speed fluid blowing unit for blowing a high speed fluid in a direction parallel with the extruding direction of the
- 10 filaments to thereby attenuate the filaments extruded from said nozzles, and at least one air stream vibrating means for cyclically changing the flowing direction of the high speed fluid blown from said high-speed fluid blowing unit toward the direction cross to the machine direction of said conveyor;
- 15 extruding the molten polymer in the form of the filaments from said nozzles;
- blowing said high-speed fluid to attenuate the filaments extruded from said nozzles by a frictional force applied by said high-speed fluid; and,
- 20 changing cyclically the flow direction of said high-speed fluid by said air stream vibrating means to thereby while cyclically changing a movement of said filaments in the direction cross to said machine direction , accumulating said filaments onto said conveyor.

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2. The method of manufacturing a transversely aligned web according to claim 1, wherein said step of preparing said air

stream vibrating means includes disposing a pair of air stream vibrating means to be opposed to one another while being spaced apart from one another in a direction cross to the machine direction of said conveyor, and wherein said step of  
5 extruding the filaments includes extruding the filaments in a region between said pair of air stream vibrating means.

3. The method of manufacturing a transversely aligned web according to claim 1, further comprising the step of  
10 circulating said high-speed fluid blown from said high-speed fluid blowing unit in a passageway different from the passageway of said high-speed fluid from said spinning means to said conveyor.

15 4. The method of manufacturing a transversely aligned web according to claim 3, wherein said step of blowing said high-speed fluid includes blowing a hot air having a temperature higher than the melting temperature of said filaments toward said high-speed fluid at a position upstream of said air  
20 stream vibrating means with respect to the flow direction of said high-speed fluid.

5. The method of manufacturing a transversely aligned web according to claim 1, further comprising the step of spraying  
25 a liquid on said high-speed fluid to thereby cool said high-speed fluid.

6. The method of manufacturing a transversely aligned web according to claim 1, further comprising the step of stretching the web composed of the filaments piled on said conveyor in a transverse direction of said web.

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7. An apparatus for manufacturing a transversely aligned web in which filaments are aligned in a transverse direction comprising:

10 a spinning means having a plurality of nozzles aligned in an array for extruding molten polymer in the form of filaments and a high-speed fluid blowing unit for blowing a high-speed fluid in the direction parallel with the direction in which said filaments are extruded to thereby attenuate said filaments;

15 a conveyor conveying the web in the direction parallel with the arranging direction of said nozzles and depositing said filaments attenuated by said high-speed fluid thereon; and  
at least one air stream vibrating means for cyclically changing the flow direction of said high-speed fluid in the  
20 direction cross to the machine direction of said conveyor.

8. The apparatus for manufacturing a transversely aligned web according to claim 7, wherein said air stream vibrating means comprises a wall surface of which a distance against  
25 said high-speed fluid cyclically changes.

9. The apparatus for manufacturing a transversely aligned

web according to claim 8, wherein said wall surface comprises a circumferential wall surface of a rod-like body having a central axis thereof arranged to be parallel with the machine direction of said conveyor and rotatable about said central axis, and said rod-like body further having a cross-section thereof in the shape of an ellipse, a circle having at least one projection, or polygon.

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10 10. The apparatus for manufacturing a transversely aligned web according to claim 8, wherein said wall surface comprises a main face of a plate member, which is disposed to face against said high-speed fluid, and is swingable about an axis parallel with the machine direction of said conveyor.

15 11. The apparatus for manufacturing a transversely aligned web according to claim 7, wherein said air stream vibrating means comprises a plurality of air stream vibrating means.

20 12. The apparatus for manufacturing a transversely aligned web according to claim 7, further comprising a cooling means for cooling said high-speed fluid.

25 13. The apparatus for manufacturing a transversely aligned web according to claim 7, further comprising a suction means having suction ports opening at both width ends of said conveyor and disposed on a back side of said conveyor with respect to a face thereof on which said filaments are piled.

14. The apparatus for manufacturing a transversely aligned web according to claim 7, further comprising side plates enclosing a space defined between said spinning means and said conveyor at side positions on both transverse directions of said conveyor, and forming a spinning chamber having said air stream vibrating means therein.

15. The apparatus for manufacturing a transversely aligned web according to claim 14, wherein said side plates are shaped in an outwardly expanded in a transverse direction of said conveyor.

16. The apparatus for manufacturing a transversely aligned web according to claim 14, further comprising a hot air spraying means for spraying a hot air at a temperature higher than the melting temperature of said filaments on said high-speed fluid between said spinning means and said air stream vibrating means within said spinning chamber.

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